



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

SK

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,989	02/09/2001	Timothy G. Adams	50376	5885

21874 7590 03/01/2004
EDWARDS & ANGELL, LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER

THORNTON, YVETTE C

ART UNIT PAPER NUMBER

1752

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/780,989	Applicant(s) ADAMS ET AL.	
	Examiner Yvette C. Thornton	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26, 28-30, 34-39, 41-43 and 49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26, 28-30, 34-39, 41-43 and 49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is written in reference to application number 09/780989 filed on February 9, 2001 and published as US 2002/0012869 A1 on January 31, 2002.

Request for Continued Examination (RCE)

1. The request filed on January 5, 2004 for a Request for Continued Examination (RCE) under 37 CFR 1.53(d) based on parent Application No. 09/780989 is acceptable and a RCE has been established. An action on the RCE follows.

Response to Amendment

2. Claims 1-25, 27, 31-33, 40 and 44-48 have been cancelled. Claims 26, 28-30, 34-39, 41-43 and 49 are currently pending. Claim 49 is newly added.

Claim Objections

3. Claim 34 is objected to because of the following informalities: line 2 of the said claim contains a typographical error, wherein "s" should be --is--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

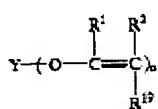
5. Claims 26, 28-30, 34-39, 41-43 and 49 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Bantu et al. (US 6,072,006). Bantu teaches a process for preparing an

Art Unit: 1752

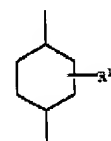
organically soluble partially cross-linked acid labile polymer. The said polymer may be blended with a photoacid generator in a solvent to formulate a chemically amplified resist composition (c. 2, l. 40-47). The general process for generating the said polymer comprises the steps of providing a polymer with one or more monomer units, wherein at least one of the said units contain one or more pendant COOH or OH groups; and reacting this polymer with a polyvinyl ether in the presence of an acid catalyst to form links between at least two polymer chains. In the taught invention polyvinyl ether means a compound with two or more vinyl ethers. In a further embodiment, a monovinyl ether is added to the above process to form a ketal or acetal protecting groups by functionalizing the monomer units of the COOH or OH pendant groups. A monovinyl ether is defined by the taught invention as a compound with only one vinyl ether (c. 2, l. 48-63). The process further provides a process for forming a pattern which comprises the steps of providing the chemically amplified resist composition comprising the said polymer; coating a substrate with the resist composition; imagewise exposing the resist coated substrate to actinic radiation; and forming a resist image by developing the resist coated substrate. Further processing of the substrate may take place after the formation of the image (c. 3, l. 16-24;), such as implantation of a dopant, deposition of another material on the substrate or an etching of the substrate (c. 13, l. 25-33). See also column 12, line 21-column 13, line 24. Bantu teaches that radiation sources, which can be used, are all sources, which emit radiation in which the photoacid generator is sensitive. Examples include argon ion (126 nm), krypton ion (146 nm), electron beam and x-ray sources (c. 12, l. 60-61).

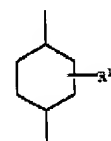
Art Unit: 1752

The preferred hydroxyl based reactant polymers are phenolic or hydroxycycloalkyl-based polymer or mixtures thereof. The more preferred phenolic based polymer is polyhydroxystyrene (PHS) and novolak and the more preferred hydroxycycloalkyl-based reactant polymer is polyvinylcyclohexanol (c. 4, l. 1-14). Any suitable polyvinyl ether may be used for the taught crosslinking process. The preferred ether has the general formula:



(c. 4, l. 15-59). Suitable examples include cyclohexanedimethanol divinyl ether and ethylene glycol divinyl ether (c. 4, l. 60-67). See also column 5, lines 1-45. The taught polymer may further contain an alkali insoluble monomer unit having either an acid sensitive or non-acid sensitive group. Preferred monomer units include acid sensitive (meth)acrylates such as t-butyl methacrylate (c. 7, l. 64-c. 8, l. 6).



It is the examiner's position that when X is the taught cyclohexyl group , the limitations of claimed invention wherein the polymer is "substantially free" and "completely free" (cl. 30, 43) are met. Further, the examiner is of the position that one of ordinary skill in the art would readily envisage a composition comprising the preferred embodiments of the taught invention wherein the crosslinked polymer of the taught invention is admixed with the preferred acid sensitive monomer of t-butyl (meth)acrylate as disclosed in column 7, line 64 through column 8, line 6.

Conclusion


6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Bantu et al. (US 6,262,181 B1), which is a divisional of the above cited reference.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday from 8:00 am to 6:30 pm.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff, can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Yvette Clarke Thornton
Patent Examiner
Art Unit 1752

yct
February 22, 2004